

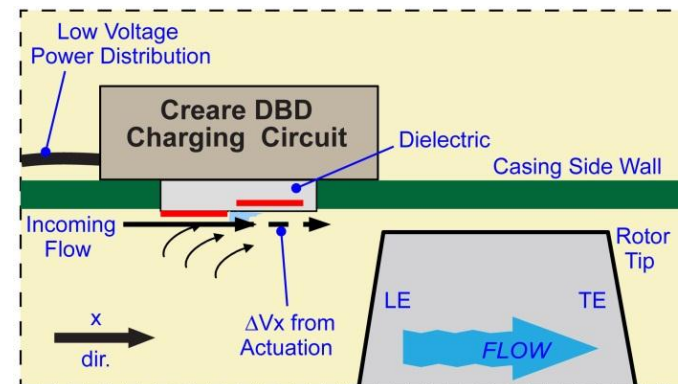
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**Creare Inc., Hanover, NH 03755**

Creare demonstrated an innovative plasma actuator system intended for compressor flow control which enables:

- More effective plasma actuator thrust generation, with 6–8 times the effective thrust obtained from Kapton dielectric actuators as traditional AC actuation systems at equivalent voltage.
- Significant (7%) increase in maximum lift in transonic airfoil testing through use of leading edge actuators.

**Expected TRL Range at the beginning and end of the Contract:**  
3-4

- Designed a plasma actuator excitation system optimized to enhance the produced thrust.
- Developed, tested, and characterized a plasma actuator excitation circuit which supplies the desired optimized waveform.
- Characterized the resulting system in both benchtop and wind tunnel characterization tests.
- Designed and built multiple plasma actuator devices powered by the proof-of-concept system.
- Installed the DBD actuator devices in flow test facilities and characterized their performance for both produced thrust and effectiveness as flow control devices.



### Dielectric Barrier Discharge (DBD) Actuator Concept Schematic

**NASA Applications.** This technology supports NASA’s mission to help improve the performance of commercial aviation through development of advanced gas turbine engine systems. The technology also has the potential for enabling improved gas turbine engine performance for applications as far reaching as Unmanned Aerial Vehicles (UAVs) proposed for extraterrestrial exploration.

**Non-NASA Applications.** A fully developed active flow control technology for turbomachinery may also prove useful in commercial applications in which separation phenomena are known to cause performance issues, including turbine engines (for both power generation and aircraft use), wind turbines, and aerial vehicles.

## Firm Contact

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